

Of course, there is one other condition you may find that the doctor did not mention: a very common one, though not so common in women as in men, and that is stone in the pelvis or in the kidney proper, or in the ureter. There are also cases of foreign bodies in the bladder which are not so infrequent in women.

Dr. Molony, closing: In this discussion Dr. Meyer has evidently overlooked some points I have already mentioned. The frequency of micturition in tuberculosis of the bladder may be due to secondary infection, or it may be caused by tuberculosis of the ureter. It is an established fact that you may have extensive disease of the bladder without giving rise to frequent urination under conditions already stated. Many fallacies exist in renal tuberculosis, as Dr. Meyer states, the first subjective symptoms are often vesical ones, while the bladder is still perfectly normal. Yet you may have the contrary, in "closed renal tuberculosis," where the patient with a diseased kidney has no bladder symptoms whatever and may appear perfectly well for months or years. In this case you have complete obliteration of the lumen of the ureter. It was only in very recent years that Dr. Beer of New York first made use of high frequency current in the destruction of bladder papilloma. It is stated by some authorities that these currents seem to have a special affinity for diseased conditions of mucous membranes.

Papilloma or bullous growths, or ulcers, in the neck of the bladder, are lesions that harbor infection. When these lesions are treated by D'Arsenal or Oudin currents with fine wire insulated electrode they shrivel up and disappear, leaving a healthy condition of the mucous membrane.

I presume an electric current that will destroy a lesion of this description will also destroy any bacilli or infection in proximity to that lesion. The lesions disappear, the patients are relieved, some of them after years of great suffering. It would be rash to say that the application of electric currents to lesions in the neck of the bladder would cure infections coming from the upper urinary tract. Some of these cases had already been treated by dilatations and bladder washings, only to aggravate the condition. Foreign bodies and calculi in the bladder are outside the scope of this discussion. I have seen no cases reported in recent literature similar to this one of clearly defined ulcers of the neck of the bladder and posterior urethra. I have made no deliberate search, so I presume there may have been.

NUTRITIONAL DISTURBANCES OF INFANCY.

By GEORGE D. LYMAN, M. D., San Francisco.

The German school of pediatrics headed by such men as Finkelstein, Czerny and Myer look upon infantile intestinal disturbances somewhat differently from what we do. We are apt to put an emphasis on bacteriological findings. The Germans emphasize errors in feeding. Every infant, according to this idea, has a certain amount of tolerance for the fat and carbohydrate of cow's milk. When this tolerance is overstepped, and has been abused over a considerable length of time from a formula too high in fat or carbohydrate, the infant reacts with a nutritional disturbance. Finkelstein has invented a terminology for these several conditions, which has been generally adopted in Germany and Austria, and which we wish to present here. An abuse of the tolerance for fat results in a "balance" disturbance. When the tolerance for carbohydrate has been abused dyspepsia results; decomposition, when both carbohydrate and fat tolerance have

been abused and intoxication is an extreme intolerance for carbohydrate.

When we first went to Germany and took up the nutritional disturbances from a German standpoint we were up in the air so far as understanding the terminology was concerned. We did not know that "balance disturbance" was simply an intolerance for fat, that dyspepsia was a reaction against carbohydrate, milk sugar in particular, that decomposition corresponded to marasmus and that alimentary intoxication was summer complaint and cholera infantum sporting under a foreign name. The old familiar conditions had taken on such distinguished handles that for the time being we were nonplused and did not find ourselves until we had delved into the German literature on the subject and ferreted out the details. It has occurred to us that some of you may find yourselves in a similar boat and not seeing any familiar landmarks at hand drift helplessly to sea. On this account we are setting forth here a description of these conditions hoping any shipwrecked medico will find sufficient elucidation to reach familiar ground again.

NUTRITIONAL DISTURBANCES OF INFANCY FOLLOWING AN ABUSE OF TOLERANCE FOR FAT AND CARBOHYDRATE.

(According to Finkelstein and Czerny.)

- I. *Balance Disturbance* or weight disturbance. Bilanz Störung, Finkelstein.
Die Milchnährschaden, Czerny.
Due to an abuse of tolerance for fat.
- II. *Dyspepsia*.
Abuse of tolerance first for carbohydrate then for fat.
- III. *Decomposition*. (Marasmus) Finkelstein.
Mehlnährschaden (Czerny).
Extreme intolerance for fat and carbohydrate.
- IV. *Alimentary Intoxication*. Cholera infantum; summer complaint.
Developing from second and third.
Extreme intolerance for carbohydrate.

BALANCE DISTURBANCE OR WEIGHT DISTURBANCE.

The infants suffering with balance disturbance supply the cases we see so plentifully in our clinics and private practices. They are the great class of babies who, without exhibiting any morbid symptoms, remain far behind the average infant of the same age in size and in weight and who are brought to us because they do not gain. On examination we find that the turgor is poor, the muscles are soft and flabby, the abdomen distended, the skin dry, color pale and the motor and restive functions so impaired that the infant is away behind his age. The mother tells us that the child is continuously fretful, whines, sleeps poorly and does not nap during the day as a healthy infant should. These little sufferers are subject to furunculosis and intertriginous eruptions. They have running noses and frequent attacks of bronchitis, all due to the lowered resistance.

The stools, in the less severe cases, are not particularly distinctive. They appear normal or lighter in color. In the more pronounced cases the stool is typical of the condition—the dry,

white formed or crumbly—"kalk seife" or soap stool. In some cases the stool is so dry and well formed that it rolls off the diaper on changing. Chemically these stools are found to contain much more earthy alkalies and much less fatty acid and neutral fat than the normal stool. In other words there is an increased output of alkalies, mainly the K and Na.

In most cases the condition is due to an over-feeding with milk with a deficiency of carbohydrates. In other cases there is a failure to thrive due to the milk formula used and in still other cases the child is weakened through intercurrent infection and cannot take care of the prescribed milk formula. Here is a condition where it is dangerous to feed by age without consideration of weight and body surface. The physician in charge looks up his chart for a feeding formula for an infant of three months say, and writes out the formula, and the child does not gain in weight. He does not take into consideration that other factors than age are important. Ready-made formulas do not fit the average baby any more than ready-made suits fit the average man. A formula, like a suit, has to be tried on.

Czerny says the milk fat is the factor in the causation of this condition and proves his assertion by proving that these cases gain when put on a formula rich in carbohydrates and poor in fat.

Finkelstein believes the part played by the fat is secondary to the fermentation of the milk-sugar and shows that these cases gain when put on a malt preparation instead of lactose.

The diagnosis of "Balance Disturbance" is made when the infant is not gaining, has no diarrhea, no history of other infections and is receiving one hundred calories per kilogram.

Treatment: The indication here is to limit the amount of milk and increase the percentage of sugar. In the less severe cases giving a formula in which the percentage of fat is low and adding at least three per cent. of sugar is all that appears to be necessary. As milk sugar ferments very easily, it is better to use some other preparation, preferably the maltose dextrine preparations. Sometimes better results are obtained when two carbohydrates are given in conjunction, that is, when small quantities of oatmeal, wheat or barley flour are given in conjunction with some other carbohydrate. Often there will be no gain by the simple addition of maltose; but when one per cent. of oatmeal or wheat flour is added, an immediate gain takes place. Carbohydrates can be added up to six or seven per cent. This second carbohydrate can be given as the dilutant. That is, one tablespoonful Quaker Oats can be boiled in one pint water for one-half hour and strained. Evaporation being made up in the finished preparation by the addition of boiled water and this oatmeal water can be used to dilute the milk. Or a modification of Liebig's malt soup or Keller's malt soup may be given. In the more severe cases these two preparations are invaluable.

Malt soup is prepared as follows: In a shallow vessel, fifty grams of wheat flour are warmed in one-third liter of milk, stirring constantly. In a

second vessel one hundred grams of Loefflund's malt soup extract are dissolved in two-thirds liter of water. Both preparations are mixed, allowed to boil and poured through a fine sieve.

Malt soup is only to be recommended for infants who have passed the age of three months. Experiments have shown that under three months the infantile digestion cannot take care of carbohydrates in any great quantity. Keller's malt soup is also to be recommended when by other methods constipation results.

Buttermilk prepared with five to ten grams of wheat flour and fifty to seventy grams of malt sugar is also to be recommended. After the preparation has been given for six to eight weeks it is best to resume feeding with an ordinary milk mixture.

DYSPEPSIA.

This condition can be either primary or follow on the heels of a balance disturbance, and is due to an absolute or relative over feeding, or the tolerance for carbohydrate has become so abused that fermentation cannot longer be held in check and increased peristalsis and diarrhea ensue.

Dyspepsia is characterized by gastro-intestinal symptoms. There is loss of appetite, vomiting, regurgitation, flatulence and colic. On account of the colic the child is very restless. This colic is probably due to the lack of motor function and in the examination of the stomach contents there is a deficiency of Hcl. The stools are increased in numbers, thin in consistency, contain mucus and are either watery or minced and chopped. They give an acid reaction, have a sour odor and the color is green. The little patients are pale, sleep superficially and whine and cry a great deal. On examination the turgor is found to be of poor quality, the body weight is at a standstill or there are slight daily losses. The temperature is usually subnormal.

Pathology: The local symptoms of dyspepsia are due to fermentation of the stomach and intestinal contents. The primary cause of this increased acidity and fermentation is the carbohydrate; the fats play only a secondary part and commence to cause trouble when the carbohydrates have begun the disturbance. This can be proved by treating these cases with a milk dilution containing low carbohydrate percentages, when all the symptoms will disappear. Of the sugars, milk sugar ferments the easiest, then cane and least of all the maltose dextrine preparations.

Treatment: By far the best results are obtained with these infants by resorting to breast milk, especially at the time when the little victims are under three months of age. In the severe cases it is best to begin with small amounts and gradually increase.

When artificial feeding is resorted to it is best to proceed as follows: First, wash out the stomach and the bowels, or administer proportionate doses of castor oil or calomel. For the first twelve to twenty-four hours nothing should be given by mouth, but weak tea sweetened with saccharin. After that the feedings can be begun again, but it is necessary to proceed very carefully.

One-third the required amount should be given. Fifty grams per kilogram with appropriate dilution should prove sufficient. About every two days the strength of the food can be increased. The safest dilutions are those which contain the least possible amount of fermentable sugar. For the less severe cases, milk not too rich in fat, without addition of sugar and diluted with oatmeal water is especially recommended. As the infant begins to improve carbohydrate in some form may be added. The maltose dextrine preparations give the best results. Under no circumstances should milk sugar be used. In the more severe cases it is wise to use skimmed milk or buttermilk appropriately diluted and without addition of sugar.

Many pediatricians think buttermilk, on account of its sourness, has a beneficial influence. When it is possible to add more carbohydrate the gain in weight takes place immediately. When there is a too great and too prolonged deficiency in carbohydrate there is danger of inanition.

If with the addition of sugar there is no gain in weight, it is due to a light infection or beginning decomposition, and when due to a beginning decomposition it is well to resort to breast milk or eiweiss milk, of which we will speak in detail later.

DECOMPOSITION (MARASMUS).

This is a severe form of the condition produced by a mixture too rich in fat or carbohydrate.

The chief symptom is the great loss of weight, which in the beginning is slow and later proceeds more rapidly. So that ultimately the skin hangs in folds on the wasted bodies, and the infant looks like a little old wrinkled man. The hands are so emaciated that they are claw-like. The abdomen is usually distended, often rigid. The muscles are flabby and hypertonic. Color pale and anemic, later grayish. The mucous membranes retain their red color, and the lips look as though rouged.

In the beginning these infants are in a state of excitation. They whine piteously and continuously and take little nourishment. Later they sink into a state of apathy or semi-torpor. The pulse is irregular and slow. The temperature is subnormal and subject to wide fluctuations. Edema and cyanosis are common. The urine is free from albumen and sugar. The stools are dyspeptic, either loose and watery or formed. In the latter condition they are apt to contain considerable fat. In this condition a diagnosis of fat diarrhea is apt to be made. At times the stools are tea colored, black or reddish black, due to blood. In this wretched condition it is very easy for the infant to succumb to a secondary infection, bronchitis, pneumonia, furunculosis, cystitis or some pyemic condition. It has been found by autopsy that a not small percentage of these cases succumb to duodenal ulcer.

Pathology: Czerny believes that this condition is the outcome of fermentation so that normal absorption cannot take place in the intestine. He believes also that a pathological change takes place with the water and salt content of the cells, as increased amounts of salt are given out in the stool and increased amounts of moisture through

the lungs. Following this loss of salt through the intestine there is an increase of N H in the urine. To reimburse this loss the body depots are called upon with a resulting destruction of cell substance. Then inanition ensues, the digestion of fat and carbohydrate fail, fermentation prevents the absorption and increases the peristalsis, the milk goes undigested through the intestine. In this way the great loss of weight can be understood and accounted for. The body cells cannot functionate properly and an intoxication ensues.

Treatment: The infant suffering from decomposition should not be put upon a hunger period and should have breast milk if possible. It is best to begin very carefully with the amounts given. It is not safe to give too large quantities. There is danger of increased fermentation and with too small quantities of inanition. It is best to proceed as follows:

Give as the total quantity for the day seven to ten ounces, divided into eight to ten periods. Every two days the amount should be increased up to the seventh to tenth day when one hundred calories per kilogram should be given.

In the first few days there is not much improvement. In fact the general appearance may be worse. The patients are paler, duller, have subnormal temperatures, and irregular pulse. At times it is seven to eight days before the weight is stationary and the baby begins to mend. This reparation period can be hastened by giving buttermilk with small additions of carbohydrate or malt soup, although it is better to give neither before the fourth week. It is two or three weeks before the infant is sound again. Then comes the question of return to bottle feeding. When it is not possible to get breast milk, it is best to use buttermilk or a milk dilution with a weak fat percentage.

In the first stages of this condition eiweiss milk is especially to be recommended. It is easier to give additions of carbohydrate in this media, the tolerance is increased and the casein antagonizes the fermentation present. It is also advantageous in that it is possible to go over to artificial feeding without stirring up fermentation. Through it the danger of inanition is eliminated and the reparation accelerated. It is best here to begin with small doses—ten ounces divided into five or six periods. Every two days three ounces more are given and when the stools are good the amount is increased more rapidly until the infant is receiving one hundred and eighty to two hundred grams per kilo weight. The total daily amount should not be increased over one thousand grams, 1 liter. When the stools have improved an addition of sugar should be given, such as the maltose dextrine preparations, at any rate three per cent. and gradually increase to five or six per cent. and one per cent. additional of some flour. Eiweiss milk should not be given longer than six to eight weeks. After this time the infant is so much improved it is possible to give a milk mixture.

ALIMENTARY INTOXICATION.

The most severe degree of acute nutritional disturbance is the alimentary intoxication or

cholera infantum. In this condition the accompanying symptoms are so much more prominent than those from the intestine, that the latter stand in the background. In a pronounced case, there are nine prominent symptoms. In conjunction with the diarrhea there is a characteristic unconsciousness, toxic respirations, albuminuria, glycosuria and casts in the urine, fever, loss of weight and a leukocytosis; but it is not necessary to have all these symptoms present at one time in order to make a diagnosis of alimentary intoxication.

(1) Fever. This is the most important of all the symptoms, although there is nothing particularly characteristic about it; it reaches one hundred and four to one hundred and five degrees gradually but following a hunger diet of twenty-four hours, falls by crisis to normal or subnormal, which proves that it is of a purely alimentary nature.

(2) Glycosuria. This is also alimentary in nature and appears early. If the infant is fed on milk sugar it is lactose which is most frequently found in the urine, although of late other sugars have been found.

(3) Albumen and casts and sometimes red and white blood corpuscles are found in the urine. The amount of urine is small in quantity and cloudy, the number of uric acid crystals present suggests an infarct. The presence of albumen and casts is not due to a nephritis but to the destruction of the tissue cells. It never results in a nephritis but ceases with the healing of the alimentary disturbance. The presence of sugar is due to a functional disturbance of the intestinal wall.

(4) Diarrhea. Of the diarrhea there is nothing particularly characteristic. In the beginning there are many loose and watery movements. Later when the toxic symptoms are more prominent there is atony of the intestines.

(5) Loss of weight. The great loss of weight is due to the loss of water which leaves the body through the intestines, lungs and often through vomiting. The amount of urine is decreased. The general appearance now is particularly characteristic. The face is peaked and pinched, the fontanel is sunken and the skin has a peculiar consistency like dry leather.

(6) Unconsciousness. In the beginning, these infants are in an excitable condition, restless, unsatisfied, cry a great deal and toss about the bed. In between there is abnormal dulness and apathy. As the condition becomes worse the restlessness increases, the movements of the extremities become automatic, almost cataleptic. The little arms are held in what the Germans call "die Fechter Stellung" or fighting position. The face wears an anxious expression and finally begins the whining cry which lasts for hours at a time. This stage goes on slowly to one of depression. The cry ceases. The infant becomes ominously quiet. The facial expression becomes mask-like. The arms are held on the breast in a cramp-like position with the fists doubled. There is strabismus of the eyes and myotic pupils.

(7) Change of Respiration. It is toxic in nature and resembles the respiration seen in diabetic coma.

(8) Collapse. Finally there is complete collapse of the infant. The extremities and the nose are cool. The reflexes are abolished. Pulse is very weak. The heart tones barely audible and the skin becomes grayish in color.

(9) The Leukocytosis is of little importance. Soor is the most frequent complication.

Pathology. Czerny believes the cause of the intoxication is bacterial fermentation of the milk either in the intestine or before being ingested. The carbohydrate and the fat of the milk offer a good proliferating media for the bacteria and an overproduction of fatty acids and an acidosis follows.

Finkelstein on the other hand thinks the bacteria plays a minor role. He finds the carbohydrate and salts in the whey, the injurious elements. His supposition is that the whey in the intestine is unfavorable for the normal procedure of digestion and a fermentation results. This fermentation starts with the carbohydrates and then includes the fats. Fermentation products result particularly in an acidosis.

Treatment. For the first twelve to twenty-four hours a starvation diet, that is the infant receives no nourishment, only fluid to drink. The fluid must be pushed as the little body is fairly well dried out and sadly in need of fluid. For this purpose a weak tea solution; boiled water or Heim Johnsche solution (NaCl 5.0; NaHCO₃ 5.0; Aq. 1000) or Moro's carrot soup diluted 1:2 are to be recommended. The Murphy drip and subcutaneous injection of normal salt solution are also great aids in getting fluid into the little water-depleted bodies. If necessary the stomach can be lavaged and an enema given. It is better not to use castor oil or calomel. It may be necessary at this time to give some stimulation, camphor or caffeine subcutaneously or five to ten drops of cognac in water every three hours. There is at this time continual danger of collapse. If the body is cool a mustard bath is to be recommended.

After twenty-four to thirty-six hours these little patients are much improved. The temperature falls by crisis and is either normal or subnormal, which point, above all else, proves that the temperature is of an alimentary nature. The diarrhea is less. The toxic symptoms have disappeared. Now it is necessary to proceed very carefully; the least overfeeding is apt to result in a relapse and continuance of the toxic symptoms.

Above all other forms of food offered, mother's milk is indicated here. The little sufferers are too weak to suck at the breast and it is necessary to express the milk for them, the quantities should be small and repeated frequently. One teaspoonful ten times during the day, and on account of the danger of relapse it is necessary to proceed slowly and gradually. After several days of this careful feeding it is possible to put the infant directly on the breast.

With artificial feeding of every kind there is the continual danger of lighting up the old toxic condition. On this account it is best to use preparations weak in carbohydrate and fat. Skimmed milk and buttermilk without sugar offer good

media. The last is especially commendable on account of its high salt content. It is best to begin with small amounts and gradually increase until it is possible to add carbohydrate in one form or another.

Another good food for this condition is Finkelstein's Eiweiss milk. The curd of a quart of whole or liquid milk which has been coagulated with pepsin-rennet, etc., is thoroughly washed in cold water to remove all the whey and is then put through a hair sieve to break up the curds. This should be done at least twice. The curd is then mixed with a pint of buttermilk and a pint of boiled water. It is especially to be recommended because we have a mixture with the smallest possible percentages of sugar and fat—2.5% of fat and 1.5% milk sugar—the two elements to be avoided on account of danger of fermentation; the whey is diluted so that the tolerance for sugar is improved and the increased amount of proteid antagonizes the fermentation.

It is necessary to give the Eiweiss milk in small quantities at first and as soon as the stools are improved in quality, 3% sugar should be added, but in the form of malt sugar. Without this addition a gain is impossible.

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A CASE OF COMPLETE DUPLICATION OF THE RENAL PELVIS AND URETER.*

By ARTHUR B. CECIL, A. B., M. D., Los Angeles.

Cases of complete duplication of the renal pelvis and ureter are relatively infrequent. In 649 operations on the kidney and ureter reported by Braasch from the Mayo clinic seven cases of complete duplication of the pelvis and ureter were encountered. Gross congenital abnormalities in general, however, of the kidney and ureter are by no means uncommon and from the fact that these abnormal organs are so frequently the seat of disease, one should always be on guard for their detection in the study of diseases of the urinary tract. Perhaps in no class of surgical cases is a preoperative diagnosis of such vital importance.

The introduction of pyelography by Volcker and its extensive application by Braasch has made it possible to demonstrate, previous to operation, gross anatomical changes in congenital abnormalities. Geraghty, of Young's clinic, through the introduction of phenolsulphonephthalein as a functional test has added a method of inestimable value in that it is now possible, not only to demonstrate gross anatomical changes, but to determine the actual functional value of the renal parenchyma.

In the following case the anatomical abnormality was demonstrated by the injection of colloidal silver and the functional value of the right kidney and the two portions of the left by the use of phenolsulphonephthalein.

Case Report: Mrs. C. L. W., age 48, married, was referred to me for urological examination by Dr. W. M. Lewis, of Los Angeles, on August 12, 1914. She complained of being unable to urinate, of being feverish and worn out. Her father died at the age of 63 of heart trouble. Her mother died of tuberculosis. She had five brothers and they are all living and well.

Previous History: As a child she had measles, mumps and several attacks of tonsillitis. From childhood she has never been robust, but was never actually sick until she became pregnant in 1891. During the entire pregnancy she suffered greatly with nausea and general weakness. The weakness became so marked that for five weeks previous to the birth of her child she was confined to her bed. About one week prior to the birth her face and limbs became greatly swollen and pitted on pressure. Her physician told her that she had a form of Bright's disease. For three days previous to the birth she passed bloody urine and this continued at every urination until the child was born. At no time did she suffer pain or discomfort in either renal region. Immediately after the birth of the child her condition rapidly improved. The edema subsided and she felt well. In 18 months another child was born and during this pregnancy she was able to attend to her household duties until labor pains began. She did not suffer with edema during this pregnancy nor did the urine at any time contain blood. There was a perineal tear and a repair of the perineum was done in 1896. Following this pregnancy she suffered with a constant bearing down sensation



Cut No. 1. Collargol injection. Note normal outline of the right renal pelvis and ureter and duplication of left renal pelvis and ureter. The caudal portion of the left pelvis is hydronephrotic and most of the collargol has returned alongside of the catheter into the bladder. The arrow points to a small amount of collargol which has passed the obstruction and entered the hydronephrotic sac.

and for the relief of this the uterus was suspended in 1903.

Menstruation began at 14. The flow was usually very slight and never lasted over three days. At the time of menstruation she suffered severe cramp-like pains in the lower abdomen. These pains caused her to be confined to her bed at each menstrual period. This condition was entirely re-

* Read before the Los Angeles County Medical Society, October 1, 1914.